Answer Sheet for CHE654 Homework Set #1
(100 points)

<u>Note</u>: For all problems, submit a copy of your process flow diagram and a copy of your input summary of the process.

1. (20 points) ***Mass Balances and Constraints with Elementary Modules, I***
(a) Draw the flowsheet in terms of elementary modules

(b) Is the problem constrained? Circle: Yes   or   No

   How many standard inputs are missing? ____

   How many constraints are present? ____

   List the missing standard input:

   _____

   _____

   _____

(c) Selectivity of Reaction 1: A + B → C = _____

   Fractional conversion of reaction 3: 2C → D + F = _____

   Pure component E feed flow rate into absorber = _____ lbmol/hr

   Mole-recovery of light key in column overhead = _____

   Total molar flow rate of streams:

   S4: _____ lbmol/hr; S7: _____ lbmol/hr; S8: _____ lbmol/hr

4. (20 points) *Mass Balances and Constraints with Elementary Modules, IV*

Number of missing standard input = _____

Number of constraints = _____

Check one: The problem is: [ ] under-specified   [ ] fully specified   [ ] over-specified

Streams	Component Flow Rates (lbmol/hr)			Total Flow
	A	B	C	
S1				
S2				
S3	50			
S4				160
S5				
S6				

5. (20 points) *Mass Balances and Constraints with Elementary Modules, V*

Number of missing standard input = _____

Number of constraints = _____

Check one: The problem is: [ ] under-specified   [ ] fully specified   [ ] over-specified

Streams	Component Flow Rates (lbmol/hr)			Total Flow
	A	B	C	
S1		0	0	
S2				
S3				
S4				
S5				
S6				150.00

9. (10 points) *Determination of Tear Streams and Computation Order, II*

The minimum number of tear streams = _____

The tear stream locations are: _____

A complete computational sequence: _____

_____

_____

10. (10 points) *Determination of Tear Streams and Computation Order, III*

The tear streams are: _____ _____

Computational order: _____

_____

11. (20 points) *Finding Tear Streams and Computational Sequence Using A+*

(a) Output from A+ Control Panel showing tear streams and computational sequence

(b) Write down 3 exclusive tear sets from Forder-Hutchison's loop analysis

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